Nicole Gilbert and Lisa Jones

**Topic:** Clouds (Three Clouds Activity- Blogging)

**Content Standards:**

SC Standard 4-4: The student will demonstrate an understanding of weather patterns and phenomena.

4-4.2 Classify clouds according to their three basic types (cumulus, cirrus, and stratus) and summarize how clouds form.

SC Standard 6-4: The student will demonstrate an understanding of the relationship between Earth’s atmospheric properties and processes and its weather and climate.

6-4.3 Classify shapes and types of clouds according to elevation and their associated weather conditions and patterns.

**ISTE Standards:**

2. Communication and Collaboration

Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others.

a. interact, collaborate, and publish with peers, experts, or others employing a variety of digital environments and media.

b. communicate information and ideas effectively to multiple audiences using a variety of media and formats.

**Essential Question:**

How do different types of clouds determine different types of weather?

**Content Question:**

How are the three basic types of clouds formed?

**Quick Summary of Lesson**

This activity provides three different methods for producing clouds. One activity serves as a demonstration and the other two activities serve as hands-on activities for the students. As students complete the activities the teacher and students will take digital pictures of activities. Each set of partners will post a picture from one of the activities and a comment about it on the class blog. Comments will need to explain the activity and tell what the students learned from the activity.

**I. Cloud in a Jar**

**Materials**

1 gallon jar with wide mouth (like a pickle jar)  
1 plastic storage bag (like gallon size Hefty baggy)  
1 #64 rubber band  
small amount of water  
one match  
warm overhead projector

**Procedure**

1. Set up the jar on top of a lit overhead projector. The lighted overhead will focus on the inside of the jar.  
2. Put a small amount of water in the bottom of the jar. A 1/4 inch depth should do just fine.   
3. Drop a lit match into the jar. The water will put out the lighted match producing the smoke particles necessary for making a cloud in the jar.  
4. Place the storage bag inside the jar and fasten the edges to the lip of the jar with the #64 rubber band.  
5. Now grab the bottom of the bag (which should be towards the bottom of the jar) and raise the bag up. When the bag is pulled up (decreasing the pressure inside the jar), the water will land on the smoke particles (nuclei) producing a visible cloud.

**Notes to the Teacher**

By raising the plastic bag (lowering the pressure) and lowering the bag (increasing the pressure), the cloud will form and disappear!

Do make sure the room is dark - otherwise you may not be able to see the cloud!

**II. Cloud in a Jug**

**Materials for each group**

1 gallon jug with a small mouth (like an apple juice jug)  
#7-#10 stopper with 2 glass tubes fitted through the holes of the stopper (Size of the stopper needed depends on size of the mouth of the jug. Stopper should fit snugly in the mouth of the jug.)  
sphygmomanometer (pressure bulb with rubber tubing)  
another small piece of plastic tubing to fit over the second glass stopper tube  
pinch clamp  
small amount of water  
one match  
each student will need student worksheet available in Student Activity Sheet section below

**Procedure**

1. Simply have students follow instructions provided on Student Activity Sheet. Students should answer question prompts as they do the activity.

**Student Activity Sheet**

Please click [here](http://www.windows2universe.org/teacher_resources/3clouds_sheet1_edu.html) for student activity sheets. All activities on the Windows to the Universe site may be printed and reproduced if being used for educational purposes.

**Notes to the Teacher**

Have students work in pairs for this activity. Have each student complete a Student Activity Sheet for assessment purposes.

Some background information: when air is compressed, there are more collisions between the molecules in a given period of time -- this is registered as an increase in heat. When air expands, there are less frequent collisions between the molecules of air -- which is registered as a decrease in heat. If an air mass is cooled sufficiently, its dew point will be reached and a cloud will form (or fog will form under certain conditions at ground level).

**III. Cloud in a Bottle**

**Materials for each group**

1 clean, clear 2L plastic beverage bottle with cap  
1 thin liquid, crystal temperature strip (available in most aquarium stores)  
1 fizz keeper (available in most large supermarkets in pop or soda aisle)  
tape  
1 match  
each student will need student worksheet available in Student Activity Sheet section below

**Procedure**

1. Simply have students follow instructions provided on Student Activity Sheet. Students should fill in the tables and answer prompts as they do the activity.

**Student Activity Sheet**

Please click [here](http://www.windows2universe.org/teacher_resources/3clouds_sheet2_edu.html) for student activity sheets. All activities on the Windows to the Universe site may be printed and reproduced if being used for educational purposes.

**Notes to the Teacher**

Have students work in pairs for this activity. Have each student complete a Student Activity Sheet for assessment purposes.